CLAIMS

I/We claim:

1. A system for controlling a vehicle steering system comprising:

a power steering pump;

an electronic flow control device coupled to the power steering pump; and

an electronic control unit configured to control the electronic flow control device such that hydraulic parasitic losses are minimized.

2. The system according to claim 1, wherein the electronic flow control device is a valve.

3. The system according to claim 1, wherein the electronic control unit controls the electronic flow control device to reduce fluid flow based on a vehicle speed.

4. The system according to claim 1, wherein the electronic control unit controls the electronic flow control device to reduce fluid flow based on a steering wheel rate.

5. The system according to claim 1, wherein the electronic control unit is configured to monitor actual electronic flow control device current and generate a final control signal based on a desired electronic flow control device current and the actual electronic flow control device current.

6. The system according to claim 1, wherein the electronic control unit is configured to calculate a desired steering assist for the electronic flow control device by interpolating values from a two dimensional lookup table.

7. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device based on a driver operational selection signal.

8. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device based on steering assist override information.

9. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device using a variable loop time.

10. The system according to claim 9, wherein the variable loop times are shortened when the electronic control unit senses increasing steering wheel rates.

11. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device based on vehicle acceleration.

12. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device based on the steering wheel rate and residual steering forces.

13. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device using a dead band for small steering wheel rates.

14. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device using information about a lock stop position of the vehicle steering system.

15. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device based on the engine speed.

16. The system according to claim 1, wherein the electronic control unit is configured to control the electronic flow control device compensating for hysteresis in the electronic flow control device.

17. The system according to claim 1, wherein the vehicle input signal information is directly digitized by the electronic control unit.

18. The system according to claim 17, wherein a digitizing period is matched to a refresh period of the vehicle input signal information.

19. The system according to claim 1, wherein the electronic control unit is configured to control the desired electronic flow control device using variable values normalized for the physical range of each variable.

20. A method for controlling a vehicle steering system comprising:

monitoring vehicle input signal information;

calculating a desired steering assist based on the vehicle input signal information;

controlling an electronic flow control device based on the desired steering assist; and

generating the desired steering assist demand such that hydraulic parasitic losses are minimized in the steering system

21. The method according to claim 20, wherein the electronic control unit controls the electronic flow control device to reduce fluid flow based on a vehicle speed.

22. The method according to claim 20, wherein the electronic control unit controls the electronic flow control device to reduce fluid flow based on a steering wheel rate.

23. The method of claim 20, further comprising:

monitoring actual electronic flow control device current;

generating a final control signal as a function of the calculated desired electronic flow control device current and the actual electronic flow control device current.

24. The method of claim 20, wherein the calculation of the desired steering assist includes interpolating values from a two dimensional lookup table.

25. The method of claim 20, wherein the calculation of the desired steering assist is calculated evaluating a driver operational selection signal.

26. The method of claim 20, wherein the calculation of the desired steering assist is based on override information.

27. The method of claim 20, wherein calculating the desired steering assist includes using a variable loop time.

28. The method of claim 20, wherein calculating the desired steering assist is based on vehicle acceleration.

29. The method of claim 20, wherein calculating the desired steering assist includes calculating a compensation factor for vehicle cornering situations.

30. The method of claim 20, wherein calculating the desired steering assist is calculated using a dead-band for small steering wheel rates.

31. The method of claim 20, wherein calculating the desired steering assist is calculated using information about a lock stop position of the vehicle steering system.

32. The method of claim 20, wherein calculating the desired steering assist is based on information about engine speed.

33. The method of claim 20, wherein calculating the desired steering assist includes compensating for hysteresis in the electronic flow control device.

34. The method of claim 20, wherein the calculation of the desired steering assist is calculated using variable values normalized for the physical range of each variable.

35. The method of claim 20, wherein vehicle input signal information is directly digitized.

36. The method of claim 35, wherein a digitizing period is matched to a reference period of the vehicle input signal information.